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For Supervisor's use only

90147



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

MATHEMATICS, 2002

Level 1

1.1 Use straightforward algebraic methods and solve equations.

Credits: Three

9.30 am Wednesday 20 November 2002

Check that the Candidate Code Number on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

If you need more space for any answer, use the pages provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Achievement Criteria <i>For Assessor's use only</i>		
Achievement	Achievement with Merit	Achievement with Excellence
Use straightforward algebraic methods and solve equations. <input type="checkbox"/>	Use algebraic methods and solve equations in context. <input type="checkbox"/>	Use algebraic strategies to investigate and solve problems. <input type="checkbox"/>
Overall Level of Performance		<input type="checkbox"/>

You are advised to spend 25 minutes answering the questions in this booklet.

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PACKAGES

Show **ALL** working.

QUESTION ONE

Expand and simplify:

$$(5j - 4)(j + 3)$$

=

=

QUESTION TWO

Factorise:

$$c^2 - 5c - 24$$

=

QUESTION THREE

The cost of sending a parcel by *Eagle Courier Company* depends on the weight of the parcel and the distance it has to travel.

The rates are \$2 per kg and 25 cents per km.

The cost (\$**C**) of sending a parcel can be calculated using the formula:

$$C = 2w + 0.25d$$

where **w** is the weight in kg
and **d** is the distance in km.

The distance from Hamilton to Auckland is 130 km.

Find the cost of sending a parcel weighing 5 kg from Hamilton to Auckland.

C =

QUESTION FOUR

Solve the following equations:

(a) $(x + 4)(x - 9) = 0$

 $x =$ _____

(b) $8.1x + 4.4x = 100$

 $x =$ _____

(c) $\frac{2x}{3} - 4 = 6$

 $x =$ _____
QUESTION FIVE

A formula for the perimeter, P , of a rectangle is:

$$P = 2b + 2h$$

where b is the length of the base of the rectangle
and h is the height of the rectangle.

Make b the subject of this formula.

 $b =$ _____

QUESTION SIX

A shop sells packs of gift cards in boxes that have clear plastic lids.

Each box is 4 cm high and has a square base.

The outside of each box is painted.

The area painted on each box is 260 cm^2 .

The outside surface area of the box is given by:

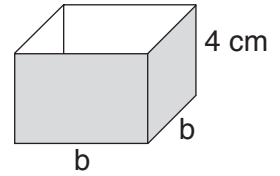
$$A = b^2 + 16b$$

where **A** is the area painted in cm²

and ***b*** is the length of the base of the box in cm.

Solve the equation $b^2 + 16b = 260$ to calculate the length of the base of each box.

Show all working.



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In a sale at the bookshop, all the paperback books were one price and all the magazines were another price.

Kirsty bought 3 paperback books and 1 magazine and paid \$39.80.

$$3p + m = 39.80$$
[illegible]

